depositing a low dielectric constant layer comprising silicon carbide on the substrate in a processing chamber;

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introducing a processing gas into the processing chamber;

generating a plasma of the processing gas in the processing chamber; and

exposing the low dielectric constant layer to the plasma of the processing gas.

2. The method of claim 1, wherein the low dielectric constant layer has an oxygen content of about 6% or less by atomic concentration.

3. (Cancelled) The method of claim 1, wherein the low dielectric constant layer comprises silicon carbide.

4. The method of claim 1, wherein the processing gas is an inert gas selected from the group consisting of helium, argon, and combinations thereof.

5. The method of claim 1, wherein exposing the low dielectric constant layer to the plasma increases the density of a surface of the low k dielectric constant layer.

~~6~~ 5. (Amended) A method for processing a substrate, comprising:

depositing a low dielectric constant layer on the substrate in a processing chamber by a plasma enhanced chemical vapor deposition process; and

treating the low dielectric constant layer with an in situ passivating process comprising:

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introducing a nitrating gas selected from the group consisting of ammonia, nitrogen, nitrous oxide, and combinations thereof, into the processing chamber;

generating a plasma of the processing gas in the processing chamber; and

exposing the low dielectric constant layer to the plasma of the processing gas.

7. The method of claim 6, wherein the nitrating gas forms a nitrided surface on the low dielectric constant layer.

8. The method of claim 1, wherein exposing the low dielectric constant layer to the plasma comprises supplying a power density between about 0.08 watts/cm^2 and about 6.4 watts/cm^2 to the processing chamber to generate the plasma.

9. The method of claim 8, wherein the low dielectric constant layer is exposed to the plasma for between about 10 and about 120 seconds.

A3 10. (Amended) The method of claim ~~6~~ 5, wherein the low dielectric constant layer comprises silicon carbide.

11. The method of claim 1, wherein processing the substrate comprises introducing a processing gas of an inert gas, a nitrating gas, or combinations thereof, into the processing chamber at a flow rate of about 3000 sccm or less, maintaining the processing chamber at a pressure of between about 1 Torr and about 12 Torr, generating the plasma by supplying a power density between about 0.3 watts/cm^2 and about 3.3 watts/cm^2 to the processing chamber, and maintaining the plasma between about 20 and about 60 seconds.

12. The method of claim 11, wherein the low dielectric constant layer has an oxygen content of about 6% or less by atomic concentration.

13. (Allowed) A method for processing a substrate, comprising:

depositing a silicon carbide layer on the substrate in a processing chamber;

introducing a processing gas selected from the group of an inert gas, a nitrating gas, or combinations thereof, into the processing chamber;

generating a plasma of the processing gas in the processing chamber; and

modifying a surface of the silicon carbide layer by exposing the silicon carbide layer to the plasma of the processing gas to form a passivating surface on the silicon carbide layer.

14. (Allowed) The method of claim 13, wherein the inert gas is selected from the group consisting of helium, argon, and combinations thereof.

15. (Allowed) The method of claim 13, wherein the processing gas is an inert gas and the density of the surface of the silicon carbide layer is increased.

16. (Allowed) The method of claim 13, wherein the nitrating gas is selected from the group consisting of ammonia, nitrogen, nitrous oxide, and combinations thereof.

17. (Allowed) The method of claim 13, wherein the processing gas comprises a nitrating gas and a nitrided surface is formed on the low dielectric constant layer.

18. (Allowed) The method of claim 13, wherein exposing the low dielectric constant layer to the plasma comprises supplying a power density between about 0.3 watts/cm^2 and about 3.2 watts/cm^2 to the processing chamber to generate the plasma.

19. (Allowed) The method of claim 18, wherein the low dielectric constant layer is exposed to the plasma for between about 20 and about 60 seconds.

20. (Allowed) The method of claim 13, wherein the chamber pressure is between about 1 Torr and about 12 Torr.

21. (Allowed) The method of claim 13, wherein processing the substrate comprises introducing a processing gas of an inert gas, a nitrating gas, or combinations thereof, into the processing chamber at a flow rate of about 3000 sccm or less, maintaining the processing chamber at a pressure of between about 5 Torr and about 10 Torr, generating the plasma by supplying a power density between about 1.2

watts/cm^2 and about 1.6 watts/cm^2 to the processing chamber, and maintaining the plasma between about 20 and about 60 seconds.

22. (Allowed) The method of claim 13, wherein the silicon carbide layer is a barrier layer, an etch stop, a passivation layer, or an anti-reflective coating.

23. (Allowed) The method of claim 13, wherein the silicon carbide layer has an oxygen content of about 6% or less by atomic concentration.

24. (Amended) A method for forming a low dielectric constant barrier layer on a substrate, comprising:

depositing a silicon carbide layer on the substrate; and

depositing a passivating layer comprising silicon and nitrogen on the silicon carbide layer by a process comprising:

introducing a silicon containing gas and a nitrogen containing gas into a process chamber containing the substrate;

initiating a plasma in the process chamber;

reacting the silicon containing gas and the nitrogen containing gas in the presence of the plasma to deposit the passivating layer comprising silicon and nitrogen.

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25. The method of claim 24, wherein the passivating layer comprises silicon nitride or silicon oxynitride.

26. (Cancelled) The method of claim 24, wherein depositing the passivating layer comprises:

introducing a silicon containing gas and a nitrogen containing gas into a process chamber containing the substrate;

initiating a plasma in the process chamber;

reacting the silicon containing gas and the nitrogen containing gas in the presence of the plasma to deposit the passivating layer comprising silicon and nitrogen.

27. (Amended) The method of claim 24, wherein the silicon containing gas is selected from the group of silane, methylsilane, trimethylsilane, substituted derivatives thereof, and combinations thereof.

28. (Amended) The method of claim 24, wherein the nitrogen containing gas is selected from the group consisting of ammonia, nitrogen, nitrous oxide, and combinations thereof.

29. (Amended) The method of claim 24, wherein the plasma is generated by supplying a power density between about 0.3 watts/cm^2 and about 3.2 watts/cm^2 to the chamber.

30. (Amended) The method of claim 24, wherein the chamber pressure is between about 1 Torr and about 25 Torr.

31. The method of claim 24, wherein the passivating layer comprising silicon and nitrogen is deposited at a thickness between about 25Å and about 500Å.

Please add new claims 32-37 as follows:

32. (New) The method of claim 6, wherein exposing the low dielectric constant layer to the plasma comprises supplying a power density between about 0.08 watts/cm^2 and about 6.4 watts/cm^2 to the processing chamber to generate the plasma.

33. (New) The method of claim 32, wherein the low dielectric constant layer is exposed to the plasma for between about 10 and about 120 seconds.

34. (New) The method of claim 6, wherein processing the substrate comprises introducing a processing gas of an inert gas, a nitrating gas, or combinations thereof, into the processing chamber at a flow rate of about 3000 sccm or less, maintaining the